



Town of Northborough Northborough Wind Turbine Committee Annual report January 7, 2010

The Town of Northborough is following the lead of dozens of other local towns who have installed or are planning to install wind turbines they include: Hull, Princeton, Nantucket, Medford, Hyannis, Chelsea, Worcester, Boston, Hancock, Bourne, Newburyport, Wrentham, Nantucket Sound, Savoy, Buzzards Bay, Woods Hole and Charlton, plus schools or businesses like the Massachusetts Maritime College and Holy Name High School. The Town of Northborough is currently investigating the feasibility of installing a wind turbine in the Ball Street area. The objective of this program is to help off-set town electrical bills generated by the schools, town offices, fire, police and public works departments through the utilization of wind generated electricity.

As with any electric power generation project, a significant amount of study is required before any equipment purchases or construction begins. To address the need for further examination of the project, the Northborough Board of Selectmen established a volunteer group, Wind Turbine Committee (WTC), comprised of engineers and other professionals all of whom are town residents.

This group is chartered to review the feasibility, explore potential sites, examine the project's economic viability, and investigate the technical aspects of turbine technology. This assignment is facilitated by working closely with various outside agencies including the Massachusetts Technology Collaborative (MTC). MTC provides technical assistance and access to funding sources beyond existing Town budgets. There has been no expenditure of Town funds for WTC efforts.

The WTC has formed five working groups to address: Site Selection, Financial Analysis, Technical Grid and Equipment Review, Public & Town Interfaces and Administrative portions of the project. To date the committee has met approximately seven times with multiple secondary discussions with the Town Engineer, potential site property owners, as well as State and Federal Government Representatives for Northborough. The five working groups are primarily staffed with engineers representing several scientific disciplines as well as having familiarity with National Grid. In addition, the groups have members with necessary financial, administration, organizational and communication skills. These working groups all meet on a regular basis, to insure timely decision making, the identification of problems, if any and the development and implementation of solutions as necessary.

WTC Accomplishments to Date

- Awarded grant by the Massachusetts Technology Collaborative (MTC) with a value of \$6,000 for the Desktop study of three sites by the University Of Massachusetts Wind Energy Center: Tougas Farm, Davidian Brothers Farm and Mt. Pisgah.
- Made several site visits to existing wind turbine facilities - Hull, MA; Holy Name HS, Worcester, MA; Princeton, MA in addition to literature and data searches on the Web
- Had meetings with Massachusetts Technology Collaborative (MTC) to explore grants and state funding possibilities.
- Presentations to:
 - Congressman James McGovern
 - Senator Harriette Chandler
 - State Senator James Eldridge
 - Representative Harold Naughton
- Investigation of Agricultural Preservation Restriction (APR) Program requirements
- Attended presentation by National Grid on electrical grid interconnection requirements
- Obtained Town of Northborough electrical billing data for use in project analysis

Wind Turbine Application

The turbine generating capacity has not been selected. The capacity will ultimately be determined during the feasibility study and the average “wind energy” available.

Wind Turbine Size

The turbine will likely be in the 70 meter height range (220+ feet) although this is also subject to the feasibility study results. The generator, gear box, turbine controls and such are located in the top (head) of the turbine with auxiliary controls at the base. As part of the control systems, turbines are also equipped with meteorological measurement equipment (anemometer/wind speed, vane/wind direction etc) to help control the blade pitch and machine operations to optimize energy capture from varying wind conditions such as speed and direction.

Wind Energy Study Requirements

Erection of a temporary (one year) meteorological environmental tower (MET) will be required to study the wind conditions, wind shear, and other energy related criteria. The MET results will be correlated with National Weather Service historical data to confirm the location is satisfactory to the MTC.

Energy Use

Net generation sent to the National Grid distribution system will be metered. The objective is to offset the town municipal electric power costs (fire, police, public works, schools, town hall, street lighting) based upon the energy produced from the turbine.

The wind turbine will not provide power for individual business, homes or other loads in town. ***It also can not provide any form of back-up power during a black-out condition and will not act as a replacement for the services provided by the franchised utility, National Grid, which presently serves the Town.***

Project Funding & Justification

The Wind Turbine Project like any other town project will be subjected to a very rigorous financial review process including development of construction grade costs estimates, determination of operating expenses, identification of project funding sources (state and federal grants, town) and calculation of payback period, internal rates of return (IRR) & economic value added (EVA). At this time ***it is premature to accurately predict the financial aspects of the project.***

Next Grant Allocation

Upon engaging the services of an experienced wind systems engineering company via a competitive bidding process, Northborough will be eligible for an \$85,000 grant including \$20,000 to install and support the operation of the MET equipment, \$50,000 to produce a feasibility study and \$15,000 to write the project business plan. The MET tower portion of the grant involves data gathering and correlation to historical National Weather Service records. The Feasibility Study includes the economic justification, determination of the optimum turbine size and height, interconnection to the National Grid system and similar criteria. The business plan then describes proposed financing, construction estimates and other commercial aspects of the project. The WTC is hopeful that through the study phase and a detailed project evaluation and justification process, that the town of Northborough will realize the benefits of using available wind power, similar to many other communities in the New England region and enjoy the same or greater level of success.

Bob Giles and Joe McNamara, Co-Chairmen